1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

The streets of Tenochtitlan were the canals bordered by footpaths, and frequent bridges allowed easy access to all parts of the town. Three great causeways led north, west and south to the mainland, touching it respectively at Tepeyac, now Guadalupe, Tlacopan, now Tacuba, and Coyoacan. Canals paralleled these main roadways where they entered the city proper, following them as far as their terminus at the main plaza. Two aqueducts also joined the city to the mainland. The one to Chapultepec seems to have been constructed exclusively to carry water and had two channels, so that when one was being cleaned or repaired the other could remain in use. The Coyoacan aqueduct, built later by Ahuitzotl, may well have followed the great southern causeway. The problem of sanitation must have been serious, but boats were tied up at strategic points for public use, and when filled their contents were sold to fertilize the fields. Pottery vessels were kept in the houses to preserve urine, which the Aztecs used as a mordant in dyeing cloth. Hence sunlight and these simple methods for getting fresh water and disposing of offal kept down the pestilence that beset the city in Spanish times when the ancient methods of sanitation were abandoned.[18]

A city so advantageously situated had no need of fortifications, and formal military architecture was rare. The temples, which dominated the city, were natural strong points; indeed, the hieroglyph for the capture of a town was the burning of a temple, an indignity to which no people would submit unless driven from this last rallying point.

The temples had stone or rubble walls surmounted by a high roof, the construction of which consisted of a cribwork of logs, either thatched with straw or covered with plaster.

1:Vaillant A-5 (1928-1936)1941 NU7 Aztec NU7

174 keenly. The Aztecs had no money, so that barter was the
438 usual means of purchase. The cacao bean, however, had a standard value, and this, in equalizing exchanges, performed the nearest approach to the function of currency. Passing
[625] through the crowd were warriors who acted as police and, should a disagreement arise, haled disputants into a court where a tribal elder settled the question in his capacity as judge.

174 Beyond the market was a double line of walls which
346 divided the market from the temple precinct of Tlaltelolco.
361 Rectangular buildings, with patios in their centers, housed the priests and the various schools and councils of the central organization of the community. Farther on were grouped the principal shrines. In their midst the great temple to the War God shouldered its bulk into the sky. There was a skull rack here, like the one in Tenochtitlan, and another heap was made of the bones of the victims. Near the great pyramid stood a circular temple, the door of which was built to resemble the mouth of a serpent, the place of worship of the god Quetzalcoatl. The sacrificial block in front was black with the smoke of incense and the blood of victims. A pile of stone knives and axes gave a sinister indication of what rites were practiced there.

[312] Pools fed by the pipes of an aqueduct leading from the mainland gave an impression of quiet peace. The reflections of the temples, distorted occasionally by the breeze, intensified the brooding mysticism of the sacred enclosure. In contrast to the austerity of the priests, young girls, their eyes virtuously downcast, slipped back and forth, carrying out the various errands of their training school within the enclosure. The great pyramid and the temple of the War God

Toxpalatl.

The Yellow Waters were very precious. The waters flowed [as a spring]; here the servants of the gods took water. And when they celebrated the feast of Uitzilopochtli, and when they celebrated each feast, here water was drunk. Here the common folk drank water.

Toxpalatl.

In toxpalatl, cenca tlaçotli catca, meiaia: vncan atlacuja in tlamacazque. Auh in jquac ylhujuh quiçaia vitzilopuchtli: yoan yn ixquich ilhujtl muchioaia, vncan atlioaloia: vncan atlia in macoualti.

Tlacochcalco Quauhquiauac.

Tlacochcalco Quauhquiauac: here was [the god] whose name was Macuiltotec. Here a feast was celebrated in his honor. And when they observed the feast day of Macuiltotec, here men were slain as sacrifices [to him]. Captives died here at Tlacochcalco Quauhquiauac.

Perchance it was when the fire drill was used [for the new fire]; perchance at another time. Likewise this was done yearly, at the feast of Panquetzaliztli, or at the feast of Tlacaxipeualiztli.

Tlacochcalco quauhqujaoac.

In tlacochcalcó quauhqujaoac, vncan catca in jtoca macujltotec: vncan ilhujquixtililoia. Auh in jquac yn jlhujuh quiçaia in macujltotec. vncan mjcoaia: vncan mjquja mamalti in tlacochcalco quauhqujiaoac:

aço yquac in tlamamalioaz, acanoçomo: no cexiuhtica in muchioaia, ipan in panquetzaliztli, anoço tlacaxipeolaiztli.

Tolnauac.

Tolnauac: here were men slain in sacrifice. Here captives died; perchance [when the day sign] ce miquiztli came in the day count.

Tulnaoac.

In tulnaoac, vncan mjcooaia: vncan mjquja mamalti, aço ce mjquiztli moquetza in tonalpoalli catca.

Tilocan.

Tilocan: here cooked [the dough of amaranth seed for] the image of Uitzilopochtli.

Tilocan.

In tilocan: vncan ycucia in vitzilopuchtli ijxiptla.

Itepeioc.

Itepeioc: here took form [the image of] Uitzilopochtli.

Itepeioc.

In itepeioc: vncan tlacatia in vitzilopuchtli.

The Tribal Temple of Uitznauac.

The Tribal Temple of Uitznauac: here was made, and here they molded in man's form, the image of the demon whose name was Tlacauepan Cuexcochtzin.

Vitznaoac calpulli.

In vitznaoac calpulco, vncan muchioaia, vncan tlacatia in ijxiptla diablo, in jtoca catca tlacavepan cuexcochtzin.

And in his reign there came a great
173 famine, which spread over the land for four years.
648 Hence was it said that the year One Rabbit had come.
[731] All the people of Mexico, and the Tepaneca and those of Acolhuacan dispersed among other [people].

manca injc mjtoa Necetochuiloc tepan moiaoac in jxquich mexicatl ioan tepanecatl, ioan acolhoacatl.

The sixth ruler of Tenochtitlan.

Axayacatl was the sixth, and ruled Tenochtitlan fourteen years. It came to pass in his reign that there was war between the people of Tlatilulco and those of Tenochtitlan. As a result of the struggle, the reign of Tlatilulco then came to an end. For forty-six years no one else reigned in Tlatilulco. And when the war was waged, he who was ruling Tlatilulco was named Moquiuixtli.

And this Axayacatl conquered Tlacotepec, and Callimaya, and Metepec, Calliixtlauacan, Ecatepec, Cuecaquauhtenanco, Teotenanco,[1] Malinaltenanco, Tzinacantepec, Coatepec, Cuitlapilco, Teoxuulco, Tequaloian, and Ocuillan.

Injc chicoacen, tenochtitlan tlatoani.

Axaiaca ic chicoacen tlatocat in tenochtitlan: matlacxiuitl ipã nauhxiuitl. Ipan mochiuh inic moiaochiuhque tlatilulca, ioan tenochca: inic mjxnamjque, vncan poliuh in tlatocaiotl tlatilulco: vmpoalxiujtl ipan chiquacenxiujtl in aocac tlatocat tlatilulco. Auh in jcoac mochiuh iauiotl: tlatocatia in tlatilulco, itoca moquiuixtli.

Auh in ieloatl axaiaca, quipeuh in tlacotepec, ioan callimaia, ioan metepec, calliixtlaouca, hecatepec, cuecaquauhtenanco, teutenanco, malinaltenãco, tzinacantepec, coatepec, cujtlapilco, teoxaoulco, tequaloia, ocujllan.

The seventh ruler of Tenochtitlan.

Tiçocicatzin was the seventh, and ruled Tenochtitlan four years. No wars were made in his reign.

Injc chicome, tenochtitlan tlatoanj.

Tiçoçicatzin, ic chicome tlatocat in tenochtitlan nauhxiujtl. Atle ipan mochiuh in iaviotl.

The eighth ruler of Tenochtitlan.

[312] Auitzotl was the eighth, and he ruled Tenochtitlan for eighteen years. When he was ruler, Mexico was flooded. By his command it was done; five springs were opened, known as Acuecuexatl, Thillatl, Uitzillatl, Xochcatl, and Coatl, which were in the territory of Coyoacan and Uitzilopochco.[1] When Mexico was flooded, four years were still to pass before Auitzotl died. And when the Spaniards came here, it was already twenty-two years before that Mexico had been flooded.

Injc chicuej, tenochtitlan tlatoanj.

Auitzotl, ic chicuej tlatocat in tenochtitlan: caxtolxiujtl ipan exiuitl. Ioac tlatocati in apachiuh Mexico: itencopa mochiuh, inic motlapo macujltetl ontzol in jntoca Acuecuexatl, tlillatl, Vitzillatl xochcatl, coahatl, inma in coioacã ioan ujtzilupochco: oc nauhxiujtl qujtztia, injc apachiuh mexico, in aiamo mjqui aujzatl. Auh in jcoac ollaque Españoles, ie iuh cempoalxiujtl omome, capachiuh in mexico:

And it came to pass in his time that the sun was eclipsed, at midday. For about five hours the darkness was overspread; the stars appeared. All were much terrified. It was said: "The demons of darkness will descend; they will eat people."

ioan ipan mochiuh in tonatiuh qualoc, nepantla tonatiuh: aço macujlli horas in tlaiocxtimanca, nezque in cicitlalti, cenca nemauhtiloc, mjtoaia: ca oalitomaque in tzitzimime, tequaque:

And he conquered those of Tzinhcoac, and Mollenco, Tlapan, Chiapan, Xaltepec, Izoatlan, Xochtlan, Amaxtlan, Mapachtepec, Xoconochco, Ayotlan, Maçatlan, and Coyoacan.

. ioan quinpeuh in tziuhcoaca, ioan mollanco, tlapan, chiapan, xaltepec, izoatlan, xochtlan, amaxtlan, mapachtepec, xoconochco, aiutlan, maçatlan, coioacan.

175 The ninth ruler of Tenochtitlan.

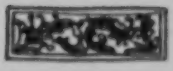
Moctezuma was the ninth, and he ruled Tenoch-

Injc chicunauj, tlatoanj tenochtitlan.

Motecuçuma ic chicunaui tlatocat in tenochtitlan

1. Same as colored. The Real Academia de la Historia MS has ŷ meani for same.

-2-



648 Sixteenth Chapter. Here is related how Moctezuma went in peace and calm to meet the Spaniards there at Xoloco,[1] where now standeth the house of Alvarado, or there at the place they call Uitzillan.[2]

Inic caxtolli occe capitulo: vncā mjtoa in quenjn Motecuçoma pacca, iocuxca quinnamjqujto Españoles, in vmpa xuluco, in axcan ie vmpa manj ical alvarado, in anoço vncan quitoa Vitzillan.

And after this, when [the Spaniards] reached Xoloco, when affairs had thus far developed, and had reached this point,[3] thereupon Moctezuma arrayed and bedight himself in order to meet them. And [with him were] a number of great lords and princes, his chief men and nobles. Upon this, they went to meet them. In shining gourds they set out fine flowers — sun flowers[4] and magnolias,[5] and, lying in the midst of them, popcorn flowers,[6] yellow magnolias,[7] and cacao blossoms;[8] and [there were] wreaths for the head and garlands. And they bore golden neck bands, neck bands with pendants, and plaited neck bands.

Auh in ie iuhquj in oncico xoluco, in ie vncan tlantimanj ie vncan iequetivitz. Niman ie ic muchichioa, mocencaoa in Motecuçomatzin injc tenamjquiz: yoan oc cequintin vevcintin tlatoque in tlaçopiltli, in jtlatocaiovan, in jpilloan: njmā ie ic vi tenamjquizque, xicalpechtica cōnamāque in tlaçouchitl, in chimaluchitl, in iollouchitl inepantla icatiuh in jaqujxuchitl, in cozticiiexuchitl, in cacaouxuchitl, icpacxuchitl, in xuchineapantli: yoā quitquj in teucujtlacoxcatl, chalchiuhc coxcatl, coxcapetlatl.

And when, there at Uitzillan, Moctezuma met them, he then offered gifts to the war leaders, to the leaders of the warriors; he gave them flowers; he bejeweled them with neck bands; he hung garlands about them; he placed chains of flowers on them

Auh ie vncan in vitzilla ontenamjc Motecuçomatzin, njman ie ic contlamamaca in iautachcauh, in intepachocauh iauquizque, coxochimacac, concoxcati in concatl, conxchicoxcati, conxchiapan, conjcpacxuchiti: njman ie ic ixpan contequjlia in teucujtla-

1. Xoloco or Xuloco served to identify the canal which ran along the Calzada de Chimalpopoca; this canal was crossed by a bridge given the same name. In times past they have been named Canal and Bridge of San Antón. Its exact location is the intersection of the Calzadas of San Antonio Abad and Chimalpopoca, the place of the first meeting of Cortés and Moctezuma (*personal communication*, Rafael García Granados). See map. Alfonso Caso, in *Los barrios aztecas de Tenochtitlan y Tlatelolco* (México, D. F.: 6ª Mesa Redonda, Sociedad Mexicana de Antropología, Sept. 1956; mimeographed), identifies Xoloco as a *barrio* bounded N. by a line S. of Calle de José Ma. Iturrigaray, E., Pino Suárez and S. Antonio Abad; S., Loreto Alcantara; and W., extension of 20 de Noviembre.

2. Near the Church of S. Pablo, according to Lehmann's Spanish text of the *Florentine Codex*, Chapter 20.

3. Corresponding Spanish text: *"En llegando los capitanes a aquel sitio que esta sobre las casas de alvarado que se llama Xoloco."*

4. *Chimalxochitl. Chimalxuuchitl* is mentioned in Hernández, *op. cit.*, I, pp. 101-102 (fig., p. 102). Chimalxuchitl (*ibid.*, p. 100), *"tiene . . . flores redondas amarillas (parece prodigio) de un palmo, asentadas encima de escudetes más fuertes en su parte media"*; Hernández assigns L. Linn.: *grand, chimalxuchitl, nodo de sepo. Chimalxuuchitl* is classified as *"compuestas"*

5. *Yollocxochitl. Yolloxochitl* (*Talauma mexicana*, Don?), according to Santamaría, *op. cit.*, III, p. 259. According to Emily Walcott Emmart, *The Badianus Manuscript* (*Codex Barberini, Latin 241*), *Vatican Library — an Aztec Herbal of 1552* (Baltimore: Johns Hopkins Press, 1940), p. 310 and Pl. 98, it is the Mexican *magnolia* used (*sitting Sahagún*), *"was reserved solely for the nobility, especially a kind known as chalchihuxochitl."*

6. *Izquixochitl. Izquixochitl*: in Chiapas, *panicle del inicio — Bouvardia formosa*; S. *hemsleyi*; S. *linearifolia* (Santamaría, *op. cit.*, I, p. 626). Popcorn flower (*Bouvardia hemsleyi* [Le Rowe and Lee] Hemsl.), according to Emmart, *op. cit.*, p. 276 and Pl. 69 — a rare and coveted plant whose flowers were used to flower crowns. In Sahagún (Jourdanet and Simeón ed.), p. 97, n. 2, it is noted that *"Como flor sirve un Verbena longistipitata, cuarellana hemsley, de la familia Bouvardiae."*

7. *Teoxochitl. Nombre Azteca: Bauhin (Herum medicarum nunc Hispaniae obscurarum aut plantarum accuratam enarrationem historiam ac Protomi Harmandus* [Rome: Ex Typographeio Vitalis Mascardi, 1651], p. 274) *gives elocuchitl as an alternative (quem alij Elocuchitl, seu Florem Xiuit, alij vero Cocuchquiauchitl [cuquichquiz?] seu Teoxochitl publicum, nuncupant"*), a valid climatic plant (*"proceret rupestribus frigidis, & montosis locis"*). There is a confusion of terminology. Santamaría (*op. cit.*, I, p. 588) identifies it *elocuchitl* as Magnolia *acuminata* Benth. Emmart (*op. cit.*, p. 277) points out that, while according to Hernández it is a *magnolia*, in the *Badianus MS* the flower "appears to belong to the Compositae."

8. *Cacaoxochitl. Cacahuxochitl*, according to Santamaría, *op. cit.*, I, p. 279 (*Quararibea funebris Llave*). In Sahagún (Bustamante ed.), III, p. 348, it is identified as *"Rosa de cacao. Myrodia funebris. Rosa. Xuxochilcacao."* Emmart (*op. cit.*, p. 311 and Pl. 98) has *Tabernaemontana amygdalifolia* DC, one of the important cacao plants.

7: Sahagún M-S (1529-1590) 1955 NU7 Aztec NU7

Twenty-fourth Chapter. Here is told how the Spaniards and those of Tlaxcalla set out and fled from Mexico by night.

And after dark, when midnight came, thereupon came out the Spaniards, crowded together, and all of the men of Tlaxcalla. The Spaniards took the lead, and the Tlaxcallans followed behind, covering the rear, like their walls, their rear guard. They went carrying a wooden bridge, which they proceeded to lay across the canal over which they passed.[1]

At the time, it was drizzling; there was a fine sprinkle, a gentle spray, of rain. They crossed easily some of the canals, at Tecpantzinco, Tzaputlan, and Atenchicalco. But when they went to attain Mixcoatechialtitlan,[2] the fourth canal, then it was seen that they were leaving. A woman fetching water spied them, whereupon she cried out and said: "Mexicans! Come here quickly! Already they leave! Your foes are already slinking away!" Then also a man cried out from the top of the [pyramid] temple of Uitzilopochtli. His cries spread well out over the people; everyone heard him. He said: "O chieftains, O Mexicans! Your foes are already setting out! Hasten here by war boat and along the roads!"

And when it was heard, then there was an outcry. On this, the war boatmen broke forth. They rushed; they plied the poles furiously; the boats struck and bumped one another. They came to [a place called] Mictlantonco Macuilcuitlapilco.[3] And from two sides the war boats came upon them. They pressed upon them, the war boats of those of Tenochtitlan and the war boats of those of Tlatilulco. And a number went afoot, direct to Nonoalco, making their way toward Tlacopan, intending to cut off their advance.

Inic cempoalli onnavi Capítulo: vncan mjtoa in qenjn Españoles yoan in tlaxcaltreca quinque, choloque in mexico ioalpica. 726

Auh in ovaliovac in oncic ioalnepantla, njmā ie ic quiça in Españoles: onmotenque, yoan in ie ixquich tlaxcaltecatl: in españoles iacattivi, auh in tlaxcalteca tlatoquilitivi, tlatzinpachotivi, iuhquinma intenanoan, intzacuilhoan muchiuhti, quivicatiaque quauhtlapechtli contecatiaque in acaloco in jpan ompanotiaque: [32]

in jquac in aoachquiauhtimanj, aoachtzetzeliuhtimanj, aoachpixauhtimanj, oc cequj in vel companaviaque acalotli Tecpantzinco, Tzaputla Atenchicalco. Auh in oncito mjxcoa mjxcoatechialtitlā injc nauhcan acaloco: ie vncan itoqui, in ie quiça: ce atlacuje civatl, in quimjttac: njman ie ic tzatzi: quito. Mexica, xioalnenemjcan, ie quiça, ie navalquiça in amoiaovan: njmā no ce tlacatl tzatzic in jcpac vitzilobuchtli vel tepan motecac in jtzatziliz, ixquich tlacatl quicac: quito. Tlacavane, mexicae, ie onquiça in amoiauoan, vallatotoca in acalchimalli, yoan in vtli ipan. 487 [2C3]

Auh in ocnoc: njmā ie ic tlacaoaca: njmā ie ic tlatzonmonj in acalchimaleque, totoca, tequjtlanelos, macalhujtequj, macalhujtectivi, tlamattivi mjctlantonco, macujicujtlapiloc: auh in acalchimalli, necoc in jmpan valmonamjc, in jmpan valmopic, in tenuchca imacalchimal, yoā in tlatilulca imacalchimal: yoan cequintin icxipā inque, nonoalco tlanselauhque, tlacupampa itztiaque, quiniacatzacujlizquja: 726

1. The Aztec would permit reading "bridges" and "canals." — According to all other accounts, they carried only one wooden bridge, which was moved to the first canal (that is, at Tecpantzinco, before the present site of the Post Office) and could not be used for the rest of the canals (personal communication, Rafael Garcia Granados).

2. Mixcoac is supposed to the Hidrocil Hill.

These places were all at canals near the main temple square, on the road to Tlacopan. Cano (op. cit.) says at Atenchicalco and Mixcoatechialtitlan that they were on the Calzada de Tacuba between S. Juan de Letran and Guerrero; Tzaputlan was on the same calzada in the barrio of Tzapotlan.

3. The corresponding Spanish text refers to "en lugar que se llamaçia mjctlantonco, macuilcuitlapilco"; Cano (op. cit.) mentions a Macuilcuitlapilco, "que pertenece a los Padres y enseñanza Xalapeña (IV-187)."

10:Deevey N-4 (no date)1957 NU7 Aztec NU7

neighbors demonstrated practical control over the lacustrine as well as other components of their environment.

At the time of the Conquest, according to extensive researches summarized by Orozco y Berra (1864), Maudslay (1908, 1910, in the 2nd and 3rd volumes of the Hakluyt Society edition of Bernal Diaz del Castillo), and especially by Schilling (1939) and Linné (1948), the Valley lakes were more or less one continuous sheet of water. Schilling's series of sketch maps is reproduced in Figure 1. Cortés, in his second letter to Charles V (MacNutt edition, 1908, vol. 1), speaks of two lakes, because Lake Texcoco, the lowest-lying and most saline body of water, was separated from the freshwater portions by a great dike, the *albarradón* of Nezahualcóyotl. The Valley lakes of course were without outlet to the sea, and the drainage operations that began in the late 16th century and were made effective only in 1900 were devoted to the northward diversion of Lake Zumpango, regarded as the source of the most dangerous floods, to the Río Tula. The 16th-century historians believed that Texcoco had a subterranean outlet to the sea by way of a spring in the valley of Tula. Pomar (García Icazbalceta's edition, 1891, p. 58) claimed to have seen it, while Sahagún (Robredo edition, vol. 3, p. 298) described the "whirlpool" in the center of the lake as the scene where small boys were sacrificed every year. It is reasonable to suppose that the legend of the outlet was believed by the acculturated Indians, but it does not follow that the educated Aztecs believed it.

The "Lake of Mexico" of the historical sources is usually the freshwater part that surrounded the Aztec capital, Tenochtitlán. This part is now dry, as is the southernmost lake of Chalco. Dikes that served as causeways connected Tenochtitlán with the mainland, but the most important dike from the hydrographic standpoint was that of Nezahualcóyotl, which lay to the east of the city. According to tradition, the dike was built by the king of Texcoco in 1446, during the reign of Montezuma I. It was 16 km long, and required the labor of 20,000 men. The reason given for its construction was to protect the Aztec capital from floods, though it is not clear why a Texcocan king should have contributed so generously to his rival's advantage. Of the advantage, however, there can be no doubt. All of the southern valley floor, from Chalco to Tenochtitlán, was doubtless covered with *chinampas*, the artificial islands that have been called "floating gardens" since the days of the imaginative 18th century historian Clavijero. Floods along the course of this drainage would on the whole have been beneficial, though inconvenient; the real danger threatened from the Texcoco side, whence salt water, driven by seiches[1] might disastrously drown the *chinampas*. Freshets, that brought large river fish through

[1] [i.e., an oscillation of the surface of a lake lasting from a few minutes to several hours, thought to be due to inequalities of atmospheric pressure.—Analyst]

10:Deevey N-4 (no date)1957 NU7 Aztec NU7

the wind did not stir it up. It was as welled up .... and it reached the lower parts of the houses" (1954 edition, p. 18). There appear to be no modern observations of seiches, but the extraordinary Gómara remarks (1940 edition, pp. 195–196) that "the salte water ebbeth and floweth, accordyng to the wynde that bloweth".

Whether irrigation was practiced in Middle America is a question that has never been adequately considered (Millon, 1954; Palerm, 1955). Clearly it would not have been necessary in Aztec times in the Valley of Mexico; *chinampa* agriculture, which substituted for irrigation, has an ancient history in the Valley (Apenes, 1943), but it is not known elsewhere nearer than the Vale of Kashmir (West and Armillas, 1950). At other times and in other places it seems certain that the dense population could not have been maintained without irrigation. The great ceremonial center of Teotihuacán lies in a subdivision of the Valley that receives less precipitation than Mexico City, and some irrigation is practiced there today. We know from the work of Apenes (1943) and Sears (1952) that just prior to Teotihuacán times (about 500 B. C.) the Valley lakes were appreciably lower than today, and the conclusion is inescapable that Teotihuacán culture was founded on high ground and flourished during a dry time when irrigation must have been essential. Deforestation (Vaillant, 1941) complicates the hydrographic picture for Teotihuacán times but it is evident that the rise and spread of Aztec culture was related to increased moisture, reflected in high lake levels during the 14th to 16th centuries. The high levels would doubtless have continued through the 18th century, in agreement with climatic oscillations elsewhere, if sporadic attempts to drain the Valley had not been partially successful in the early 17th century (they were not completely successful until 1900).

Aztec control of hydrography, then, did not include irrigation where it was unnecessary, but was devoted, in the last centuries before the Conquest, to regulating the levels of the lakes. Before the Aztecs entered the Valley, however, they lived in many places, not all of which were lacustrine. So far archaeology has made little progress in reconstructing the details of their history during the migration period. The problem is exceedingly complicated, and four centuries of scholarship have not made it less so. The Aztecs were interested in their own history, and attempted to draw it together in pictorial manuscripts. These have been lost, and what have come down to us are copies, made, probably from memory, by hispanicized Indians under the prodding of the 16th-century friars. In the interpretation and verbalization of these pictorial histories we have to contend with ideas implanted by the friars, and the result is a picture of the migration period that is strongly reminiscent of the wandering of the Israelites, joined to a

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127 212 *Historia de las indias de Nueva-España y islas de Tierra Firme*, 1579 (Mexico, 1867–80). In this scene the most important glyphic element is the hill with a snake (Coatepec, the hill near Tula). It stands in the middle of lake beset by cattails, in which are swimming a bird, a fish, and a seal, while pollarded trees stand around, each with a bird on top. Two dignitaries are seated at either side, the male with a glyphic name representing a bird and a cactus, while the female is provided with a standard on which is seen an axolotl, rampant, with enormous external gills.

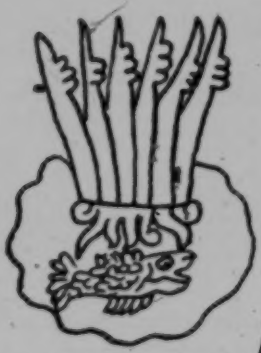

Fig. 2. Contaminated glyph for Tula, as it appears in the *Tira de la peregrinación México* (Codex Boturini) (Anon., 1944).

The implication of this curious inconography is clear and disheartening. The details about the lake of Tula were concocted by native informants to explain the glyph, probably in a manuscript now lost. Later, the pictures were drawn to illustrate the story. The glyph that provoked the story need not have been that of Tollán, for any place with *tules* in its etymology would have sufficed. We must conclude that we do not know whether Tula was situated on an artificial lake, or even whether its name was Tollán.

127 The hydrographic knowledge of the Aztecs, then, must not be judged by what was told to credulous friars by acculturated Indians fifty years after the Conquest. Cortés' account, though doubtless somewhat colored, has more of the ring of truth. In the famous Second Letter to Charles V, he said:

127 231 312 "Along one of the causeways which lead into the city, there are two conduits of masonry each two paces broad, and five feet deep, through one of which a volume of very good fresh water, the bulk of a man's body, flows into the heart of the city, from which all supply themselves, and drink. The other which is empty brings the water, when they wish to clean the first conduit, for, while one is being cleaned, the water flows through the other" (MacNutt edition, vol. I, p. 262). Again describing one of Montezuma's lesser palaces, he said: "It had ten pools of water, in which were kept all the many and divers breeds of waterfowl found in these parts, all domesticated; for the sea-birds, too, there were pools of salt water, and, for those of the rivers and lakes, there was fresh water, which for the sake of cleanliness, they renewed at certain times by means of pipes. To each kind of bird they gave the food which suited its habits in its free state, so that to those which ate fish they gave it; and likewise, worms, maize, and smaller

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seeds were supplied as required by the different birds. I assure Your Highness that all those birds which ate only fish received each day two hundred and fifty pounds, caught in the salt lakes." (*ibid.*, pp. 265–266).

Such a people could surely have dammed a stream to make an artificial lake, and if they cannot be proved to have done so at Tula, the point is probably not very important.

ICONOGRAPHY AND CARTOGRAPHY. The suggestion that the elaborately "historical" description of Tula was a pure invention, prompted by the cattails of the glyph, shows how wary we must be of inferring Aztec ideas from the pictorial manuscripts. Water and aquatic elements are widely scattered through the existing texts, but there is no necessary limnologic significance in the fact, for the symbol for water, *atl*, came to stand for the vowel-sound *a*, and a glyph that seems to the naive eye to show a lacustrine scene is usually nothing but a condensed rebus for a word in which *a* occurs (Peñafiel, 1885). However, the fact remains that Aztec hieroglyphics were caught at a stage in the evolution of syllabic writing in which the rebus is unusually representational, and the iconography itself is not without limnologic interest.

Rands (1955) has discussed Mesoamerican water symbolism in comprehensive fashion, though without particular emphasis on Aztec culture, and has discerned an extraordinary uniformity in diversity. The widespread distribution of sympathetic or imitative magic produces a high degree of constancy, in the art of all peoples, of certain aquatic connotations: rain, growing things, aquatic animals, clouds, liquids produced from various parts of the human body, etc. What Rands has shown is more surprising, a high degree of iconographic constancy, such that the same pictorial symbols (e. g. the columnar-wavy depiction of falling water) recur, in widely different styles and contexts in painting and sculpture from Maya, Mixtec, and Toltec cultures. Of particular importance for our area is the demonstration that Aztec water symbolism descends directly and with little change from Classic times, as represented by the murals of Teotihuacán.

The most satisfactory Aztec representations of water are the glyphs for place-names, because these can be read. Some of the more interesting are illustrated in Figure 3, redrawn by Martha Dimock from Clark's (1938) edition of the Codex Mendoza. The fact that this is a post-Conquest document raises legitimate doubts about the authenticity of some of its Spanish glosses, but the glyphs themselves are surely faithful versions of prototypes in lost Aztec manuscripts. The basis of this confidence is the fundamental similarity between these pictures and those in the Mixtec codices from southern Mexico, which are certainly

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and crowned with a strong wall of rubble masonry, and was protected on both sides by a strong stockade which broke the force of the waves.

"The dyke divided the lake into two parts, the larger to the East was known as the Lake of Texcoco, from the city situated on its shores, the lesser to the West was called the Lake of Mexico because the capital was surrounded by its waters on all sides. From this arrangement Mexico derived an aggregate of inestimable benefits. The great lake, like all lakes having no outlet for their waters, was salt, notwithstanding the volume of all the rivers which flowed into it, or in fact it owed its saltness to this very flow which carried in its current the soluble salts which the falling rain has robbed from the land. The salt water saturating the soil has little by little rendered it sterile, and in addition, the carbonate of soda and the thousand other impurities with which it is charged are hostile to animal life to such an extent that fishes could not live in it, neither to-day nor at the time of the Conquest, as was stated by the writers at that epoch, although the water was then less salt than it is at the present. As the lakes of fresh water to the south poured their surplus water into the lake of Mexico through the narrows of Culhuacan and Mexicaltzingo, those waters spread through the western lake, the Lake of Mexico, and completely filled it, separated as it was from the salt lake by the dyke of Netzahualcoyotl. In this way the basin of fresh water was converted into a fish pond and a home for all sorts of aquatic fowl. Chinampas covered its surface, separated by limpid spaces which were furrowed by swift canoes, and all the suburbs of this enchanting capital became flowery orchards."[1]

It will be noticed in the Upsala map that within the dyke men are depicted catching fish, while no fishermen are shown in the Lake of Texcoco, which was, however, then, as it is now, the home of numberless wild fowl. The great dyke was provided with numerous openings for the passage of canoes, but these openings were furnished with sluice gates which could be closed during the rainy season when the water of Texcoco rose and threatened to flood the City, and could be opened again to let out the fresh water from Mexico when the rapid evaporation during the summer months had lowered the level of Texcoco.

The fluctuations of level in the lakes of Chalco and Xochimilco were probably always less than in Lake Texcoco owing to the great number of copious springs of beautifully clear water which well up around their margins, especially on the west side, as well as in the lake of Xochimilco itself.

[1] Francisco de Garay, *El valle de Mexico, apuntes historicos sobre su hidrographia*, pp. 13 & 14.

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Such springs were also to be seen in and around the Lake of Mexico, but not in such considerable numbers, and there must also have been one or more on the site of the City which supplied its earliest inhabitants with drinking water, although in later Indian times the supply was brought in an aqueduct from a fine spring near Chapultepec.

"The population of Tenochtitlan (the City of Mexico) at the time of the conquest is variously stated. No contemporary writer estimates it at less than sixty thousand houses, which by the ordinary rules of reckoning would give three hundred thousand souls. If a dwelling often contained, as it asserted, several families, it would swell the amount considerably higher."[1]

The supply of food for such a population must have been a matter of no little difficulty, for the soil on the hill-sides is scanty, many of the slopes are composed of *tepetatle*, a mixture of volcanic ash and scoria fit only for growing maguey,[2] and considerable surfaces are covered with lava and carry no loam at all. The scarcity of good soil must have led to an intensive cultivation, and this is also shown by the care with which manure was collected,[3] as is the case in China and Japan to-day.

Food must have been brought from very considerable distances, and the want of a sufficient supply from the near neighbourhood must have had much to do with the predatory nature of the Aztec dominion.

Note on the Drainage.

From the time of the Spanish settlement the security of the city from floods and the drainage of the valley became the preoccupation of the Spanish Viceroys. After a severe inundation in 1555, Don Luis de Velasco replaced the Albarradon of Netzahualcoyotl, which had fallen into decay, by a similar and shorter dyke somewhat nearer the city. At the beginning of the seventeenth century a French engineer, Henri Martin, known in Mexico as Enrico Martínez, planned a system of drainage and a cutting (known as the *tajo de Nochistongo*) through the mountain rim to the north-east of the valley, but this work was only partly carried out during the following years and was not completed until the end of the eighteenth century.

The flood of 1865 again brought the question of drainage into prominence, and new works, including a large canal and a large tunnel, were commenced and brought to a satisfactory conclusion in the year 1900.

The lakes of Zaltocan and Zumpango are now almost dry during the summer months. The Lake of Chalco has been drained dry,

[1] Prescott, *Conquest of Mexico*.
[2] The American aloe, *Agave americana*, from which pulque is made.
[3] Text page 72.

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out of the city, as I shall tell later on, and that of Tepeaquilla,[1] and we saw the fresh water that comes from Chapultepec which supplies the city, and we saw the bridges on the three causeways which were built at certain distances apart through which the water of the lake flowed in and out from one side to the other, and we beheld on that great lake a great multitude of canoes, some coming with supplies of food and others returning loaded with cargoes of merchandise; and we saw that from every house of that great city and of all the other cities that were built in the water it was impossible to pass from house to house, except by drawbridges which were made of wood or in canoes; and we saw in those cities Cues and oratories like towers and fortresses and all gleaming white, and it was a wonderful thing to behold; then the houses with flat roofs, and on the causeways other small towers and oratories which were like fortresses.

After having examined and considered all that we had seen we turned to look at the great market place and the crowds of people that were in it, some buying and others selling, so that the murmur and hum of their voices and words that they used could be heard more than a league off. Some of the soldiers among us who had been in many parts of the world, in Constantinople, and all over Italy, and in Rome, said that so large a market place and so full of people, and so well regulated and arranged, they had never beheld before.

Let us leave this, and return to our Captain, who said to Fray Bartolomé de Olmedo, who has often been mentioned by me, and who happened to be near by him: "It seems to me, Señor Padre, that it would be a good thing to throw out a feeler to Montezuma, as to whether he would allow us to build our church here"; and the Padre replied that

[1] Guadalupe.

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apart from the great Cue there was another small tower which was also an Idol house, or a true hell, for it had at the opening of one gate a most terrible mouth such as they depict, saying that such there are in hell. The mouth was open with great fangs to devour souls, and here too were some groups of devils and bodies of serpents close to the door, and a little way off was a place of sacrifice all blood-stained and black with smoke, and encrusted with blood, and there were many great ollas and cántaros and tinajas[1] of water inside the house, for it was here that they cooked the flesh of the unfortunate Indians who were sacrificed, which was eaten by the priests. There were also near the place of sacrifice many large knives and chopping blocks, such as those on which they cut up meat in the slaughter houses. Then behind that cursed house, some distance away from it, were some great piles of firewood, and not far from them a large tank of water which rises and falls, the water coming through a tube from the covered channel which enters the city from Chapultepec. I always called that house "the Infernal Regions."

Let us go on beyond the court to another Cue where the great Mexican princes were buried, where also there were many Idols, and all was full of blood and smoke, and it had other doorways with hellish figures, and then near that Cue was another full of skulls and large bones arranged in perfect order, which one could look at but could not count, for there were too many of them. The skulls were by themselves and the bones in separate piles. In that place there were other Idols, and in every house or Cue or oratory that I have mentioned there were priests with long robes of black cloth and long hoods like those of the Dominicans, and slightly resembling those of the Canons. The hair

[1] Names of various large pottery vessels for holding water and cooking.

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361 walled enclosures.[193] But it was surrounded by *water* on all sides.
712 This was a *natural* protection, *apparently*. However, the lake around Mexico was the work of the Mexicans themselves, and deserves, as such, to be regarded as an evidence of no ordinary
312 skill on their part. When they fled into the space subsequently
361 transformed into a lagune, it was an extensive swamp, covered with canebrake. Many parts of it could be waded through with ease, at some places the streams emptying into it from the West filtered through the deeper channels into Lake Tezcuco. Flakes of turf or of sand occasionally protruded over the surface, and on one of these dry spots the Mexicans huddled together for existence.[194] Unmolested on account of their extreme weakness, they could extend this area of dry soil by additions of sod, by scanty artificial foundations of turf thrown into the shallow morass and, erecting upon it their frail dwellings, they lived in poverty until they found out the great advantage which this isolated position gave to them over the surrounding tribes. They realized that, while *they* might sally forth with impunity, having a safe retreat behind them, an attack upon *their* position was both difficult and dangerous for the assailant. Once *their* first attempt crowned with success they continued and, valuing their situation as the main element of strength, they improved the foothold on the mainland by compelling subjected tribes to build for them a causeway, running from the outlet of Lake Xochimilco northward, to the pueblo of Mexico.[195] This dyke, while it insured communication with the mainland, penned up the waters flowing into the swamp from the west-side, and *accumulated* them there.[196] On

[193] Motolinia (Trat. III, cap. VIII, p. 187). When the Tlaxcallans represented to Cortés the dangers to which he exposed himself by going to Mexico, they did not mention fortifications (Bernal-Diez, LXXVIII, p. 70), but simply how the place was surrounded by water, the strength of the houses, and their difficult access.

[194] Tezozomoc (Cap. I, p. 5). Durán ("Hist. de las Yndias de Nueva España," Cap. IV, pp. 36 and 37) is very explicit: "y pasados por la otra parte del rio (the outlet of "Lake Xochimilco) metieronse en los carriçales y tulares de la laguna." "Deste lugar "vinieron buscando y mirando si allarian algun lugar que fuese acomodado para po "der hacer asiento, y andando desta manera por unas partes y otras entre las espa "dañas y carriçales, allaron un ojo de agua hermosissimo." Mendieta (Lib. II, cap. XXXIV, p. 148). Torquemada (Lib. II, cap. X and cap. XI, p. 92).

[195] Durán (Cap. XII, p. 112): "pues vuelto a' los de Xochimilco les mandó que luego, "sin mas tardar, mandasen a' todos los de la ciudad hiciesen una calçada de tres bra "ças en ancho desde su pueblo hasta la ciudad de Mexico, de piedra y tierra, cegas "en el agua quel termino desta calçada tomase, y hiciesen sus puentes á trechos para "que el agua tuviese por donde salir de una parte a' otra." (Also, Cap. XIII, p. 113.)

[196] We must remember that the level of the "plaza mayor" of Mexico was, towards the beginning of this century, but one "vara" (of three Castilian feet), one foot and

14:Bandelier E-4 (no date)1880 NU7 Aztec NU7

the other hand, the fresh water emptying out of Lake Xochimilco was thrown to the east side of the dyke into Lake Tezcuco. By this simple contrivance the Mexicans surrounded their pueblo with a huge pond on all sides, isolating, or rather *fortifying* it beyond all conceivable means of Indian assault.[197] *The causeways leading to Mexico were, therefore, military constructions.*[198] Subsequently the dyke was continued to the north until where Guadalupe Hidalgo now stands (anciently Tepeyacac), thus closing up the western basin completely, and another causeway, running east and west was constructed to Tacuba. From the southern dyke a branch ran to Cuyuacan, starting at Xoloc and extending to the southwest. In order to insure free circulation of the waters, sluices were cut, which interrupted the causeways at several places. Wooden bridges, easily removable, were laid across these ditches. Thus Mexico needed no outer fortifications nor walled enclosures.[199]

one inch higher than the level of Lake Tezcuco. This elevation was purely artificial (Humboldt, "Essai politique sur la Nouvelle Espagne," Paris, 1827. Vol. II, pp. 96, 97 and 98). After the causeways running north and south had been constructed, the waters emptying into the swamp from the west side could not any longer run freely into the salt-water basin of Tezcuco. They were actually kept around the pueblo, and the swamp thus changed into a lagune. That those sources were powerful enough for such a purpose is amply shown by the great inundation which their careless opening occasioned under Ahuitzotl, in 1498 ("Essai politique," Vol. II, p. 101), of which the old authors bear ample testimony. (Durán, Cap. XLVIII and XLIX.) (Tezozomoc, Cap. LXXX.) (Ixtlilxochitl, "Hist. des Chichimèques," Cap. LXVI.) (Torquemada, Lib. II, cap. LXVII, pp. 199 and 198.)

[197] The levels of Lakes Xochimilco and Chalco are 1 vara 11 inches higher than the "plaza mayor" of Mexico. Their outlet is to the northwest, between Churubusco and Iztapalapan. Previously, when Mexico was surrounded by water, this outlet was between Mexicalzinco and Churubusco (then called "Huitzilopochco"). At Churubusco the great causeway began, and the waters emptying out of Lake Xochimilco flowed along its right hand side into Lake Tezcuco. The causeways thus increased the effects of natural drainage upon the central basin. It was certainly a very primitive but very effective work on the part of the Mexicans. We find a parallel to it, at a comparatively recent date, in Bolivia. When Andrés Tupac Amaru, the son of the unfortunate José Gabriel Condorcanqui, was blockading Sorata, in 1782, he could not, without artillery, hope to succeed against the well fortified town. Therefore, by a system of circumvallation, he enclosed the town with the waters of the Sierra, which finally destroyed the earthworks, leaving the entrance free to the infuriated Indians. 22,000 whites perished in the massacre ensuing.

[198] It is to the Hon. L. H. Morgan that we owe the first intimation in regard to the true character and purpose of these causeways. They were not merely for the purpose of insuring communication with the mainland, but especially for the defence of Mexico. Without them the area extending between the pueblo and the western shore would, at best, have remained a swamp, or would have become, as it now is, dry land. In both cases the defensive power of the Mexicans was at an end, and the course of events in Mexico would have turned quite differently.

[199] Mention is made of a fortification of some kind at "Xoloc," where the branch dyke from Cuyuacan joined the main causeway. (This must have been in the neighborhood of San Antonio.)

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An attack by water could easily be repelled from the housetops, and with the aid of the numerous canoes.[200] An Indian host, advancing upon the causeways, found serious impediments in the cuts converted into trenches by removal of the bridges. Against a sudden onslaught, a surprise, Indian fashion, Mexico was therefore amply secure,[201] nothing short of a siege might overcome its defenses. But no Indian force alone could attempt and carry out such an undertaking; it required the resources which the *Spaniards, as European soldiery*, possessed.

The effect of the first contact of the whites with the Indians of Mexico was to astonish, nay, to stupefy, the latter. They *felt*, rather than realized, that the few people who ventured so unconcernedly in appearance, among largely superior numbers, should possess superior resources to counterbalance their numerical inferiority. But the true nature of these resources was unconceivable to them, and they had no time to improve as the emergency would have required. Thus their warfare against the Spaniards became limited to all they might achieve according to their actual state of culture, and if they succumbed in the struggle, we need not be surprised. Besides the vast inferiority in armament, there existed a proportionate one in military tactics. In the words of the most celebrated author on the History of the Conquest: "They knew not how to concentrate numbers on a given point, "or even how to sustain an assault, by employing successive "detachments to support and relieve each other. A very small "portion only of their array could be brought into contact with "an enemy inferior to them in amount of forces."[202] We may add that their tactical conceptions did not go beyond the rude snares invented by savage cunning, and in their first encounters with the Spaniards (when they yet relied upon numerical superiority) beyond a fierce and disorderly onslaught.

It may not be misplaced here to review some of the principal engagements fought between the Mexican Indians and their Spanish conquerors. For this purpose we select the campaign of Cor-

[200] These canoes, "acalli," were constantly in motion within and around the pueblo. They kept up communication with the shores, and also served to carry the warriors, if necessary. We refrain from repeating here the many exaggerating reports about their numbers.

[201] Besides, constant watch was held by the priests on the summits of the temple pyramids. These were the real "guards" of the pueblo, in the daytime as well as at every hour of the night.

[202] Prescott ("History of the Conquest of Mexico," 1860. Vol. I, Book III, p. 445).

15:Bandelier E-4 (no date)1880 NU7 Aztec NU7

423 they had originally settled, the solid surface was eventually much
311 too small for their numbers, and they themselves put an efficient stop to further growth thereof by converting, as we have seen elsewhere, for the purpose of defence, their marshy surroundings into water-sheets, through the construction of extensive causeways.[80] While the remnants of the original "tecpantlalli" and of the "tlatocatlalli" still remained visible in the gardens, represented to us as purely ornamental, which dotted the pueblo of Mexico,[81] the substantial elements wherewith to fulfil a purpose for which they were no longer adequate had, in course of time, to be drawn from the mainland. But it was not feasible, from the nature of tribal condition, to extend thither by colonization. The soil was held there by other tribes, whom the Mexicans might well overpower and render tributary, but whom they could not incorporate, since the kinships composing these tribes could not be fused with their own. Outposts, however, were established on the shores, at the outlets of the dykes, at Tepeyacac on the north, at Iztapalapan, Mexicaltzinco, and at Huitzilopochco to the south, but these were only military positions, and beyond them the territory proper of the Mexicans never extended.[82] *Tribute*, therefore, had to furnish the
651 means for sustaining their governmental requirements in the matter
423 of food, and the *tribute lands* had to be distributed and divided, so as to correspond minutely to the details of their home organization. For this reason we see, after the overthrow of the Tecpanecas, lands assigned apparently to the head war-chiefs, to the military chiefs of the quarters, "from which to derive some revenue, for their maintenance and that of their children."[83] These

[80] "Art of War" (pp. 150 and 151). L. H. Morgan ("Ancient Society," Part II, cap. VII, pp. 190 and 191).

[81] Humboldt ("Essai politique sur la Nouvelle Espagne," vol. II, lib. III, cap. VIII,
[351] p. 50). Nearly all the old authors describe the public buildings as surrounded by pleasure-grounds, or ornamental gardens. It is very striking that, the pueblo having been founded in 1325, and nearly a century having been spent in adding sufficient artificial sod to the originally small solid expanse settled,—the Mexicans could have been ready so soon to establish purely decorative parks within an area, every inch of which was valuable to them for subsistence alone!

[82] The Mexican tribe proper clustered exclusively within the pueblo of Tenuchtitlan. The settlements at Iztapalapan, Huitzilopochco and Mexicaltzinco were but military stations—outworks, guarding the issues of the causeways to the South. Tepeyacac (Guadalupe Hidalgo) was a similar position,—unimportant as to population.—In the
[312] North. Chapultepec was a sacred spot, not inhabited by any number of people, and
704 only held by the Mexicans for burial purposes, and on account of the springs furnishing fresh water to their pueblo.

[83] Tezozomoc (Cap. XV, p. 24). See note 57.